

ABSTRACT

Disclosed is a method for improving the plastic ductility of high-strength molded bodies from bulk metallic glasses from Zr, Ti and Hf base alloys and molded bodies so produced. An object is to find ways to substantially increase the plasticity and toughness of bulk metallic glasses produced on the basis of early transition metals (Zr, Ti, Hf) which is comparatively low as compared to their very high strength, thereby further increasing their potential applicability as materials for airplane structures. Hydrogen in defined ranges of concentration is introduced into the molded bodies in a concentration below the brittle hydride formation concentration. The molded bodies produced comprise hydrogen in a homogenous distribution in the amorphous short-range order structure and/or in the form of hydrogen-induced local enrichment of ductile alloy components and/or in the form of hydrogen-induced precipitations of ductile nanocrystalline phases while excluding brittle hydrides.